Accelerator Systems Division Highlights Ending April 23, 2005

Installation

Craft Snapshot 4/19/05

ASD productive craft workers	**60.0**
Foremen (Pd by 15% OH)	7.0
AMSI management (Pd directly)	3.0
TOTAL AMSI WORKERS	70.0
Less WBS 1.9, 1.2 etc	**6.0**
Less absent	**4.0**
TOTAL PD BY ASD/ORNL DB WPs	**47.0**

Accelerator Physics

Operations

- Training and Certifying Operations personnel on SCL cavity operation
- Operating the SCL Cavities from 5A-17D in an off hour Operability run, and keeping operating statistics
- Preparing for PAC05
- Continuing the hiring process for the joint ASD-XFD operator
- Presented the case for the gamma blocker to the SNS Radiation Safety Committee

Ion Source

The collaboration between controls, electrical and ion source staff members has formulated a new plan for the testing of the chopper on the ion source hot spare stand. It lists the planed work that should reduce the failure rate of the switch observed on the hot spare stand. It also fixes the end date to June 1, to give us enough time to reinstall and test it on the front end in time for SCL commissioning.

Survey and Alignment

- Two overhead diagnostic laser boxes aligned.
- Five extraction area stands set for grout. (1 Lambertson, 2 Kickers, and 2 Doublets)
- One Injection area stand set for grout. (RF Kicker)
- Half Cell RA9-4 aligned.
- Two stands set for grout. (One Doublet, and one 21Q40)
- One 21Q40 optically aligned.
- Level runs: Monuments 107-106, 106-110-106, 111

Mechanical

Ring Systems Installation

- The RF Straight Section two IPM Diagnostic stands were aligned and grouted
- The last RTBT-Target 36Q85 Quad Magnet Assemblies was received and all four are staged in the Target Building.
- The Injection Chicane magnet stands were aligned and grouted.
- The Extraction Kicker Assy #1 was received and staged.
- The Extraction Lambertson magnet support stand was installed and aligned.
- The Extraction Kicker #2 and doublets support stands were installed and aligned.
- The RTBT Doublet Assy QV01-QH02 and its support stand was installed and aligned.
- The RTBT 21Q40 QV03 stand was installed and aligned.

Water Systems Installation

- Installation of the Linac SCL Cryo Warm Section cooling connections continued.
- Installation of the Ring arc magnet cooling connections is 95% complete with only the Qtr-Cells remaining.
- Installation of the Ring RF Cavity cooling connections was completed.
- Fabrication of the Ring Collimator Closed loop system was completed.
- Installation of the Ring straight section doublets cooling connections was started.
- The pressure and flow for the HEBT 21Q40 magnet QH02 was adjusted and subsequent magnet testing completed.
- Fabrication of the RTBT Collimator Closed loop system was started

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Electrical Group

- Check out of modulator SCL ME-7 started.
- Linac Klystron Gallery and Tunnel: Vacuum and diagnostic connections ongoing.
- Ring Building and tunnel: Completed Rf installation. AC cabling, controls wiring and magnet terminations in progress.
- RTBT: Magnet cable pulls in progress, also ac power installation.
- Three ring Medium power supplies were delivered and installed in the Ring Service Building bringing the magnet deliveries on this order to 73 of 77. The remainder of this order is scheduled to be delivered in three weeks.
- Completed integrated magnet/power supply/controls testing for SCL warm sections 01, 02, 17, 18, and 21 bringing the completed warm section integrated magnet/power supply/controls tests to 27 of 34.
- Completed testing of HEBT_MAG:PS_QH02, HEBT_MAG:PS_QH20, HEBT_MAG:PS_QV21, HEBT_MAG:PS_QH22, and HEBT_MAG:PS_QV23. At this time 21 of the 22 power supplies in the HEBT service building have been tested. The final HEBT Building magnet power supply, HEBT_MAG:PS_QH10 awaits installation of the magnet HEBT_MAG _QH10.

HPRF

- SCRF: Xmtrs18 and 20 have had all eleven klystrons powered in excess of 400kW. Low power parametric measurements of cryomodules 18 through 20 are complete. Connection of waveguides to the cryomodules and arc detection certification remain before this system can be turned over to Operations for high power cryomodule testing. Xmtrs 21 & 22 are in preliminary checkout. These are the last two transmitters.
- CCL4: The 5 MW klystron arced when powering at 3MW into structure. Arcing was determined to be at the klystron output window. No RF leakage was measured. The waveguide to the klystron output window is being replaced and the SF6 restored.
- RFTF: Cable trays and cables were laid in place to facilitate conversion of the RFTF test stand to standard EPICS control (from LabVIEW) and to prepare for the 402 MHz Thales klystron testing in June.

Ring RF System

- DC/Control wiring is 80 % complete.
- Most of the High Power and Low Level equipment is in place in the Ring RF Control Room.
- Ring Tunnel power and control wiring work has begun.

LLRF

- All available SCL cavities were set up and operated under closed-loop RF control for the first time on Friday evening, April 22.
- Inspection, build out, and testing of new RF Output daughterboards is in progress.
- The next major FPGA code upgrade is under test in the lab and in the SCL.

Cryo Group

- CM2 Cool down, insulating vacuum leak must be repaired, already warmed up and utubes out
- CM18 Cool down
- Successful, 90% liquid level in automatic control
- CM21, found very large warm leak on Ti-TiNb Helium vessel weld
- We'll try to repair
- Completed repair on High Beta CM
- On going Repair on 2nd Stage Warm Compressors 4 and 6

Controls

- BNL has sent us the last of their Ring/HEBT/RTBT vacuum system installation documentation, which consists mostly of wire lists in spreadsheet form. This documentation will now be augmented with panel wiring diagrams. So far we have generated 2 out of the 4 Ring vacuum system panel wiring drawings. The wiring diagrams for the HEBT vacuum wiring were updated and then handed off to Electrical Group. The SCL LEDP and HEDP wiring documentation was updated and handed over to Electrical Group.
- The HEBT and Ring motion control racks have been packaged for shipment to ORNL. This shipment will complete all the operational controls equipment from BNL except the RF/MPS interface module still under development by the BNL RF group.

- The RTBT communications cable installation SRO has been submitted to the installation team. This is the last of the major SROs for communications cables. (There are still some small SROs pending, mostly special work required for the timing master in the Ring Service Building).

Beam Diagnostics

BPM: Imaged all of the SCL, HEBT, and LDmp PCs need for the upcoming run. Testing the integrated timing: several features added; auto re-arm, manual disable overrules program re-arm, works finw with template built in capabilities.

BCM: 4 BCM electronics are prepared for the July run.

BLM: Finishing the design for the FBLM HV controller.

Laser: Quad Sensor complete, parts ordered, testing prototype when parts arrive. Putting test station together. We are planning to send the laser beam to the tunnel on Friday 29th.

D-Box: We have pulled out the MEBT HARPs to reconfigure the biasing. We plan to remove the back-plane and bias individual wires.

Video: Three Laser video systems are prepared.

Timing/Reference: 350 PCB tested and waiting for installation. Incorporated timing card installation into the OS. Testing of timing cards 100% complete